

WHAT IS CLAIMED IS:

1. A method of scheduling packets within a terminal used in a satellite communications system, the method comprising:  
transmitting bandwidth allocation requests to a satellite based upon prior bandwidth allocations and packets stored within a plurality of queues of the terminal, the plurality of queues being prioritized;  
receiving current bandwidth allocations in response to the transmitted bandwidth allocation requests; and  
preparing a schedule plan for transmitting the stored packets based upon the current bandwidth allocations and the prioritization of the plurality of queues, wherein the schedule plan assigns the stored packets to packet transmission opportunities associated with the current bandwidth allocations.
2. The method according to Claim 1, wherein the plurality of queues in the transmitting step correspond to user services that include a connection-oriented service and a connectionless service.
3. The method according to Claim 2, wherein the preparing step comprises:  
distributing assignments of packets corresponding to the connection-oriented service among the packet transmission opportunities to minimize jitter.
4. The method according to Claim 1, wherein the plurality of queues in the transmitting step is prioritized using a weighting scheme that is based upon user services.
5. The method according to Claim 1, further comprising:  
servicing the plurality of queues according to the schedule plan to selectively forward the stored packets to an uplink channel of the satellite communications system.
6. The method according to Claim 5, wherein the servicing step comprises:  
creating a hierarchical list of a subset of the plurality of queues corresponding to the packet transmission opportunities; and  
selectively preempting one of the assignment of the schedule plan based upon the hierarchical list.
7. The method according to Claim 1, wherein the packet transmission opportunities in the preparing step are time slots in a TDMA (time division multiple access) frame.

8. A terminal apparatus for transmitting packets to a satellite communications system, comprising:

a plurality of queues configured to store the packets, the plurality of queues being prioritized; and

a bandwidth-on-demand control logic configured to prepare a schedule plan for transmitting the stored packets based upon current bandwidth allocations and the prioritization of the plurality of queues, the current bandwidth allocations being based upon prior bandwidth allocation and the stored packets, wherein the schedule plan assigns the stored packets to packet transmission opportunities associated with the current bandwidth allocations.

9. The apparatus according to Claim 8, wherein the plurality of queues correspond to user services that include a connection-oriented service and a connectionless service.

10. The apparatus according to Claim 9, wherein the bandwidth-on-demand control logic is configured to distribute assignments of packets corresponding to the connection-oriented service among the packet transmission opportunities to minimize jitter.

11. The apparatus according to Claim 8, wherein the plurality of queues are prioritized using a weighting scheme that is based upon user services.

12. The apparatus according to Claim 8, further comprising:

a queue servicing logic coupled to the plurality of queues and configured to service the plurality of queues according to the schedule plan to selectively forward the stored packets to an uplink channel of the satellite communications system.

13. The apparatus according to Claim 12, wherein the queue servicing logic is configured to create a hierarchical list of a subset of the plurality of queues corresponding to the packet transmission opportunities, and to selectively preempt one of the assignment of the schedule plan based upon the hierarchical list.

14. The apparatus according to Claim 8, wherein the packet transmission opportunities are time slots in a TDMA (time division multiple access) frame.

15. A satellite communications system comprising:

a hub configured to control bandwidth allocations in conjunction with a satellite;  
and

a plurality of terminals configured to issue bandwidth allocation requests to the satellite, each of the terminals comprising,

a plurality of queues configured to store the packets, the plurality of queues being prioritized, and

a bandwidth-on-demand control logic configured to prepare a schedule plan for transmitting the stored packets based upon current bandwidth allocations and the prioritization of the plurality of queues, the current bandwidth allocations being based upon prior bandwidth allocation and the stored packets, wherein the schedule plan assigns the stored packets to packet transmission opportunities associated with the current bandwidth allocations.

16. The system according to Claim 15, wherein the plurality of queues correspond to user services that include a connection-oriented service and a connectionless service.

17. The system according to Claim 16, wherein the bandwidth-on-demand control logic is configured to distribute assignments of packets corresponding to the connection-oriented service among the packet transmission opportunities to minimize jitter.

18. The system according to Claim 15, wherein the plurality of queues are prioritized using a weighting scheme that is based upon user services.

19. The system according to Claim 15, wherein the each of the terminals further comprises:

a queue servicing logic coupled to the plurality of queues and configured to service the plurality of queues according to the schedule plan to selectively forward the stored packets to an uplink channel of the satellite communications system.

20. The system according to Claim 19, wherein the queue servicing logic is configured to create a hierarchical list of a subset of the plurality of queues corresponding to the packet transmission opportunities, and to selectively preempt one of the assignment of the schedule plan based upon the hierarchical list.

21. The system according to Claim 15, wherein the packet transmission opportunities are time slots in a TDMA (time division multiple access) frame.

22. A terminal apparatus for transmitting packets to a satellite communications system, comprising:

means for transmitting bandwidth allocation requests to a satellite based upon prior bandwidth allocations and packets stored within a plurality of queues of the terminal, the plurality of queues being prioritized;

means for receiving current bandwidth allocations in response to the transmitted bandwidth allocation requests; and

means for preparing a schedule plan for transmitting the stored packets based upon the current bandwidth allocations and the prioritization of the plurality of queues, wherein the schedule plan assigns the stored packets to packet transmission opportunities associated with the current bandwidth allocations.

23. The apparatus according to Claim 22, wherein the plurality of queues correspond to user services that include a connection-oriented service and a connectionless service.

24. The apparatus according to Claim 23, wherein the preparing means distributes assignments of packets corresponding to the connection-oriented service among the packet transmission opportunities to minimize jitter.

25. The apparatus according to Claim 22, wherein the plurality of queues are prioritized using a weighting scheme that is based upon user services.

26. The apparatus according to Claim 22, further comprising:

means for servicing the plurality of queues according to the schedule plan to selectively forward the stored packets to an uplink channel of the satellite communications system.

27. The apparatus according to Claim 26, wherein the servicing means creates a hierarchical list of a subset of the plurality of queues corresponding to the packet transmission opportunities and selectively preempts one of the assignment of the schedule plan based upon the hierarchical list.

28. The apparatus according to Claim 22, wherein the packet transmission opportunities are time slots in a TDMA (time division multiple access) frame.

29. A computer-readable medium carrying one or more sequences of one or more instructions for scheduling packets within a terminal used in a satellite communications system, the one or more sequences of one or more instructions including instructions which, when executed by one or more processors, cause the one or more processors to perform the steps of:

transmitting bandwidth allocation requests to a satellite based upon prior bandwidth allocations and packets stored within a plurality of queues of the terminal, the plurality of queues being prioritized;

receiving current bandwidth allocations in response to the transmitted bandwidth allocation requests; and

preparing a schedule plan for transmitting the stored packets based upon the current bandwidth allocations and the prioritization of the plurality of queues, wherein the schedule plan assigns the stored packets to packet transmission opportunities associated with the current bandwidth allocations.

30. The computer-readable medium according to Claim 29, wherein the plurality of queues in the transmitting step correspond to user services that include a connection-oriented service and a connectionless service.

31. The computer-readable medium according to Claim 30, wherein the preparing step comprises:

distributing assignments of packets corresponding to the connection-oriented service among the packet transmission opportunities to minimize jitter.

32. The computer-readable medium according to Claim 29, wherein the plurality of queues in the transmitting step is prioritized using a weighting scheme that is based upon user services.

33. The computer-readable medium according to Claim 29, wherein the one or more processors further perform the step of:

servicing the plurality of queues according to the schedule plan to selectively forward the stored packets to an uplink channel of the satellite communications system.

34. The computer-readable medium according to Claim 33, wherein the servicing step comprises:

creating a hierarchical list of a subset of the plurality of queues corresponding to the packet transmission opportunities; and

selectively preempting one of the assignment of the schedule plan based upon the hierarchical list.

35. The computer-readable medium according to Claim 29, wherein the packet transmission opportunities in the preparing step are time slots in a TDMA (time division multiple access) frame.